

**mindray**

# A8/A9

Anesthesia Systems

Innovative Technology Supporting Patients  
Throughout the Perioperative Care Path



At Mindray, we believe in a better future for our clinicians and patients. Our newest A8 and A9 anesthesia platform embodies this philosophy by retaining traditional features while introducing disruptive technology to maximize patient safety, help improve patient outcomes, complement the way clinicians work best and increase efficiency in the perioperative environment.



### Maximize Patient Safety

Mindray's innovative electronic platform empowers clinicians to ensure the safety of patients throughout the perioperative period, from induction to recovery, to help improve patient outcomes.



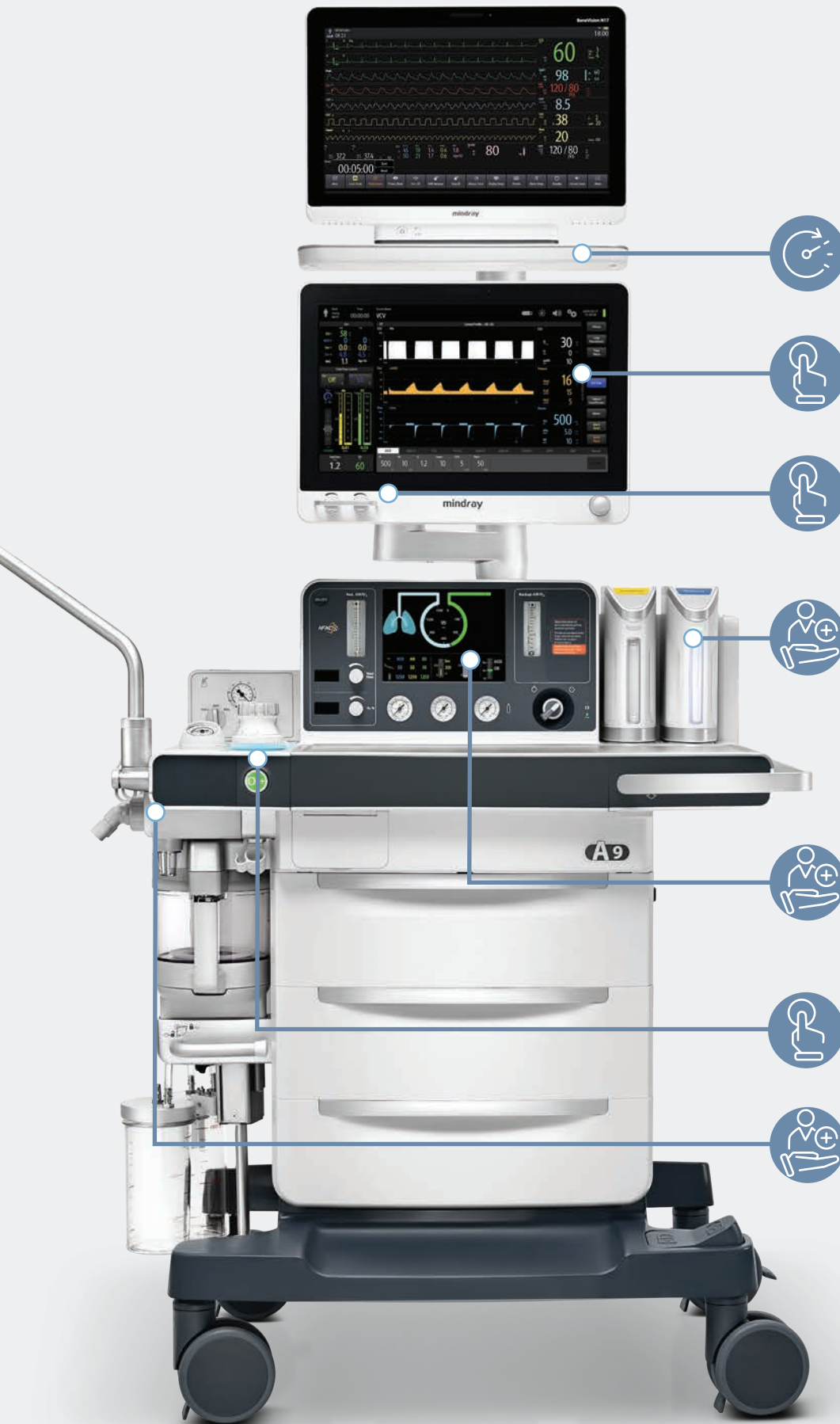
### Complement Clinical Workflow

With deep insights into the clinical workflow of the operating room, the user interface has been designed around clinicians to reduce clinical workload.



### Enhance Efficiency

Flexible data integration meets the demands of various clinical scenarios. Compatible with Mindray patient monitors and third-party clinical information systems, the A8 and A9 significantly enhance workflow efficiency in the OR.



Highly-flexible integration options work together with a variety of devices to save space in the OR



18.5 inch capacitive touchscreen, with flexible rotation for 360 degrees of view



Electronic flowmeter with traditional easy-to-use knobs supporting multiple setting methods



Precise electronic vaporizers in a familiar position notify user when agent gets low (A9 only)



VE indicator and status screen allow for quick visualization of the patient and system status to aid in rapid troubleshooting



Illumination around the APL valve in manual mode enables easy recognition of current operating mode



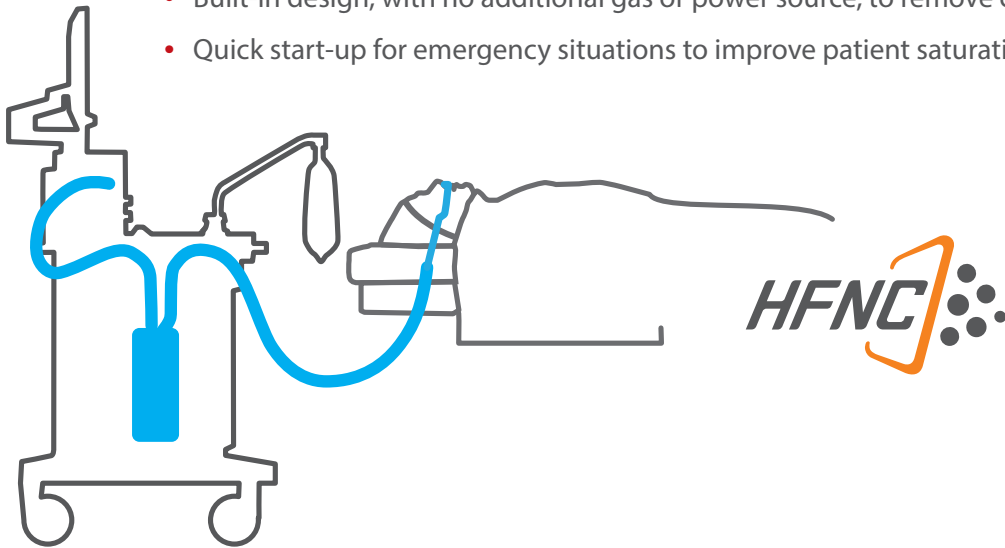
Integrated breathing circuit delivers precise ventilation



# Maximize Patient Safety

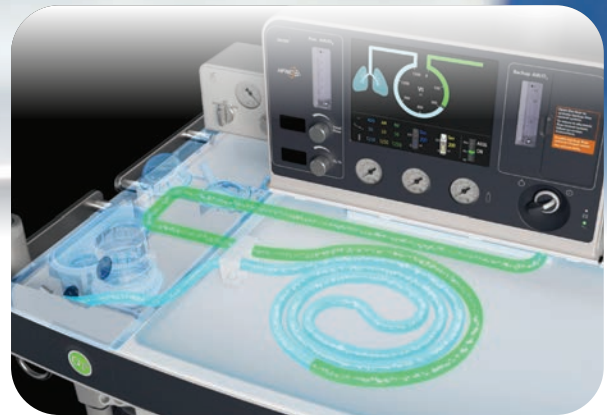
The high flow nasal cannula (HFNC) plays an important role in maintaining safe oxygen saturation in patients to help clinicians intubate more easily, especially for patients with poor oxygen saturation such as bariatric, pediatric, critically ill or those with a difficult airway.

- Direct setting of total flow and O<sub>2</sub> concentration with maximum flow up to 60 L/min
- Built-in design, with no additional gas or power source, to remove clutter and save space
- Quick start-up for emergency situations to improve patient saturation quickly



Inadequate preoxygenation was observed in approximately 56% patients.<sup>[1]</sup>

[1] *Ann Fr Anesth Reanim*, 33:e55-8 (2014)



## Innovative breathing system for ICU-level ventilation

The A9 introduces the volume exchanger (VE) as an innovative breathing system that delivers extremely precise and reliable ventilation to optimize patient safety during anesthesia.

- Quick wash-in & wash-out due to small system volume
- Precise ventilation for all patients, from adults to neonates, with tidal volume settings as low as 5 ml
- Visual VE indicator clearly illustrates the breathing system ventilation state
- No moving components reduces malfunction risk and supports increased reliability and maximized uptime



## Experience optimal performance through all stages of anesthesia

The A8 and A9 platforms offer ventilation modes to meet challenging demands for patients with chronic lung issues such as ARDS, persistent atelectasis, refractory hypoxemia or trauma.

- **APRV** (Airway Pressure Release Ventilation) incorporates a short expiratory phase of ventilation to increase venous return and cardiac output, improve CO<sub>2</sub> elimination and prevent expiratory collapse of the airways.
- **SIMV-VG** (Synchronized Intermittent Mandatory Ventilation with Volume Guarantee) delivers less invasive controlled volume to the patient, while allowing for spontaneous breaths, ensuring more comfort to the patient while they breathe spontaneously.

### Control

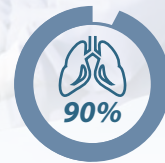
VCV  
PCV  
PCV-VG

### Assist

SIMV-VC  
SIMV-PC  
SIMV-VG

### Spontaneous

CPAP/PS  
APRV



Atelectasis may develop in nearly 90% of patients under general anesthesia.<sup>[2]</sup>

[2] *British Journal of Anesthesia*, 91 (1): 61-72 (2003)

## Protective ventilation toolkits to prevent PPCs

Powerful toolkits have been integrated into the A8 and A9 to support confident decision-making for protective ventilation, reducing the incidence of post-operative pulmonary complications (PPCs) and improving patient outcomes.

### Lung Recruitment Tool

Multiple criteria to evaluate recruitment effectiveness, plus the ability to schedule a recruitment maneuver so that it can be performed automatically.



### TV/IBW Indicator

TV/IBW can be calculated as the TV changes, which offers clinicians a clear view of appropriate tidal volume settings to avoid barotrauma.





# Complement Clinical Workflow

## Comprehensive

- Follows ASA guidelines
- Automatically checks all components to ensure proper functionality

## Fast

- All checks completed in 3.5 minutes
- System check can be scheduled to save preparation time

## Simple

- No manual intervention required during system check
- Graphic display of troubleshooting indicators

## Automatic system check

## Customizable profiles help you work smarter

Configured profiles can be customized and loaded easily for different clinical scenarios or use requirements, including default values, screen layout and system configuration.







1-2s

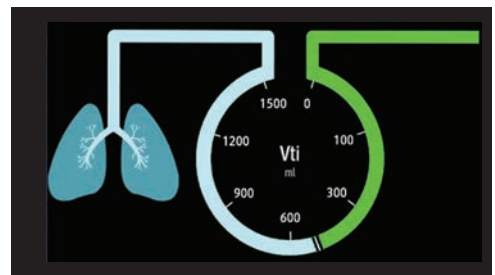
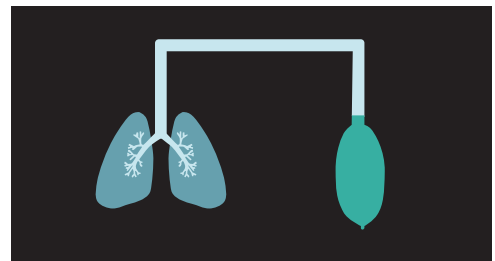
As anesthesiologists look at the monitor in 1- to 2-second glances, displays should be developed to optimize the information.<sup>[3]</sup>

[3] *Anesth Analg*, 111 (3): 653-8 (2010)

## Clear status dashboard

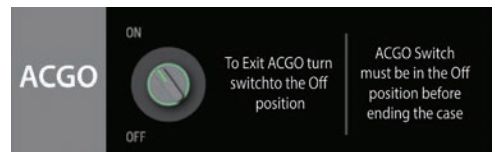
### Volume Exchanger Indicators

- Indicates mode, breath pattern and tidal volume at a quick glance
- Acts as a virtual bellows



### Systems Status Indicators

- Real-time status display to help troubleshoot quickly
- Clear prompts allow for easy surveillance of the current mode

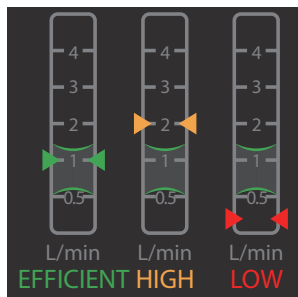




# Enhance Efficiency

## Reduced environmental and economic impact

An anesthetic gas reduction strategy provides both environmental and economic benefits.



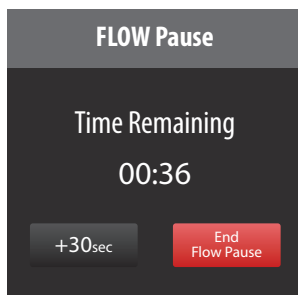
### Optimizer

Low Flow decision support tool can advise clinicians how to use lower fresh gas flows and reduce the amount of agent used during a case.

Fresh Gas+Agent Usage		
Start:	2019-11-21	9:42
End:	2019-11-21	14:42
SEV	100.0	ml
Iso	50.5	ml
O2	150.5	L
Air	150.5	L
N2O	0.0	L

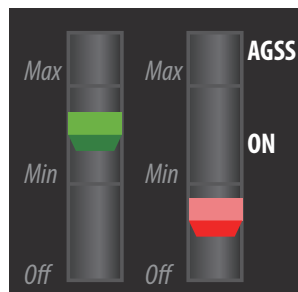
### Agent and Gas Usage

Agent and gas measurements help the delivery of low-flow anesthesia by monitoring real-time anesthetic agent consumption during and after surgery.



### Flow Pause

Flow Pause prevents unnecessary leakage of anesthetic gases into the OR during intubation, suction and other operations.



### e-AGSS System

e-AGSS monitors the scavenging flow rate, indicates abnormalities and automatically switches off when in standby to reduce energy consumption.



Using desflurane for 1 hour is equivalent to 235-470 miles of driving.<sup>[4]</sup>

[4] *Anesth Analg*, 111(1): 92-98 (2010)

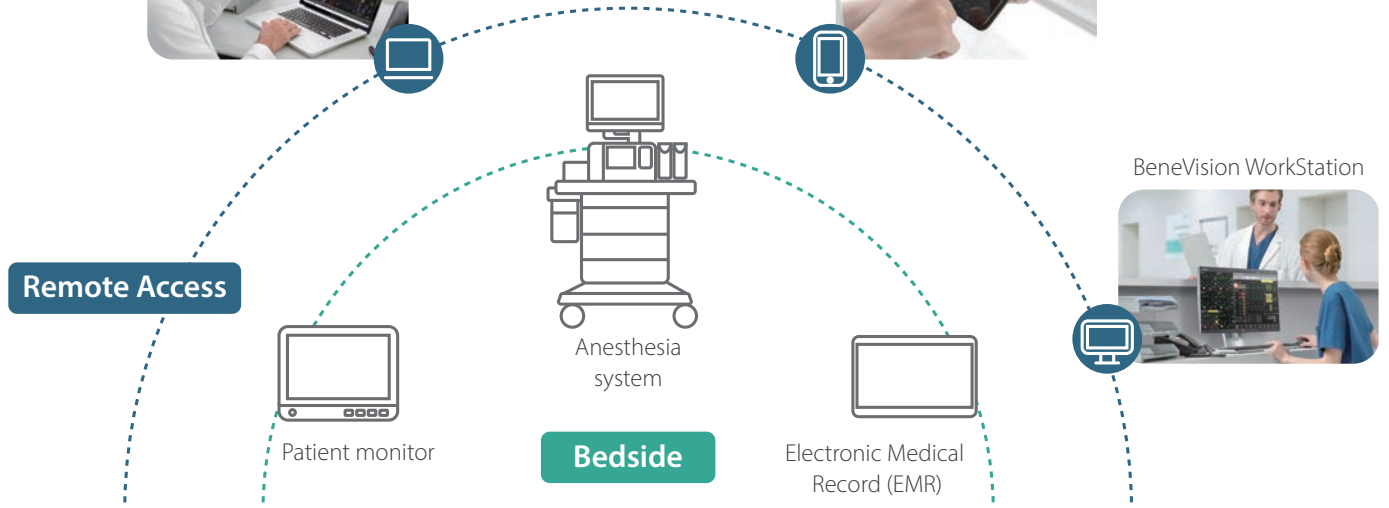
## Integration and connectivity

A8 and A9 connect securely and seamlessly for efficient patient management across the IT infrastructure.

BeneVision CMS Viewer



BeneVision Mobile Viewer



Remote Access



Patient monitor



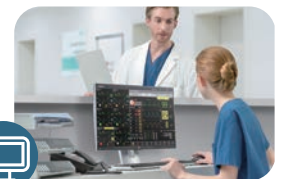
Anesthesia system

Bedside



Electronic Medical Record (EMR)

BeneVision WorkStation



# healthcare within reach



monitoring • anesthesia • ultrasound

**Vision:** Better healthcare for all

**Mission:** Advance medical technologies to make healthcare more accessible

Mindray is a leading developer, manufacturer and supplier of medical device solutions and technologies used in healthcare facilities around the globe. We believe we can change lives by making the most advanced healthcare technology attainable for all. We do this by empowering healthcare professionals through innovative, high-value solutions that help create the next generation of life-saving tools across patient monitoring, anesthesia delivery and ultrasound imaging.

At Mindray, we understand the shift in healthcare from volume to value and continuously deliver solutions that matter in this evolving environment. Our team is disrupting the industry, radically addressing today's needs with the technology of tomorrow. We are creating innovative, game-changing products and partnerships, shaping a new conversation for healthcare providers across North America. We work with thousands of healthcare providers day-to-day to drive the development and implementation of smarter technology – solutions that are simple and affordable, easy to adapt, and return bottom line results and meaningful outcomes. Together, we are creating a higher standard for healthcare.

**Mindray North America is headquartered in Mahwah, New Jersey. Our Ultrasound Innovation Center is located in San Jose, California with additional facilities in Nashville, Tennessee and Seattle, Washington.**



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